

SIPHOCAMPYLUS OSCITANS (CAMPANULACEAE: LOBELIOIDEAE), A NEW NAME FOR *BURMEISTERA WEBERBAUERI* FROM PERU¹

BRUCE A. STEIN²

ABSTRACT

Burmeistera weberbaueri is transferred to the genus *Siphocampylus* under the new name *Siphocampylus oscitans*. The species is noteworthy in being one of only three species of *Siphocampylus* known to have a dilated anther-tube orifice.

As part of a reassessment of the Peruvian members of *Burmeistera* (Stein, 1987), it has become apparent that *B. weberbaueri* Zahlbr. actually belongs to the large Andean genus *Siphocampylus*. This paper makes the appropriate generic transfer and proposes a new name to accommodate this unusual species.

Generic delimitations in Campanulaceae subfamily Lobelioideae have long been recognized as problematic (Gleason, 1925; McVaugh, 1940). Traditional systems, such as those of Presl (1836) and Wimmer (1943), rely heavily on fruit morphology for classification at the tribal level. In particular, capsular versus baccate fruit is a fundamental character used to define and align genera. Strict reliance on this dichotomy in the classification of the subfamily has separated close relatives, for example, capsular-fruited *Siphocampylus* and baccate-fruited *Centropogon*. Although fruit type in conjunction with other features can be reliable for clustering related groups of species, probable convergence in fruit characters suggests caution in its application.

Among neotropical Lobelioideae the emphasis on fruit type, and to a lesser degree on the presence or extent of a dorsal slit in the corolla (another seemingly labile character), has yielded genera of convenience. One of the most natural groupings, however, appears to be the genus *Burmeistera*, which is characterized by baccate fruits, oblong or linear seeds, mostly nonbracteolate pedicels, entire corolla tubes, and distally open and oblique anther tubes often with little or no apical pubescence.

The distally open anther tube of *Burmeistera* is one of its most distinctive features. In most genera of Lobelioideae the three dorsal anthers are longer than the two ventral ones and curve downward at the apex, effectively closing the mouth of the anther tube. This allows the internally released pollen to build up pressure as the style and stigma elongate, pushing pistonlike through the anther tube. The characteristic tuft of stiff hairs at the tip of the ventral anthers functions as a lever that opens the orifice slightly and allows the pressurized pollen to discharge. Presumably tripped by flower visitors, this action has been elegantly documented in *Isotoma petraea* by Brantjes (1983) and has been observed in the neotropical genera *Centropogon* and *Siphocampylus* (Stein, in prep.). Since the dorsal anthers in *Burmeistera* do not curve downward closing the anther tube, this type of regulated pollen discharge does not occur. This difference in pollen presentation probably explains the correlated feature of glabrous or only sparsely pilose anther apices in *Burmeistera* sect. *Imberbes* F. Wimmer: apical hairs there have no function as trip mechanisms. Whether the densely villous tuft at the tip of the ventral anthers in *Burmeistera* sect. *Barbatae* F. Wimmer has a functional role in pollen discharge is not clear.

Burmeistera weberbaueri was included in this genus by Zahlbruckner (1906) on the basis of floral features alone, as he had no mature fruit. This decision was probably based upon his observation of a naked and dilated anther-tube orifice, the absence of bracteoles, and the somewhat

¹ I am grateful to Carlos Reynal for locating the type specimen at MOL and to B. E. Leuenberger for searching for type material at B. Dan H. Nicolson kindly provided advice regarding lectotypification, and Porter P. Lowry II and Peter Goldblatt made useful suggestions on an earlier draft. Fieldwork in Peru was supported by National Science Foundation Doctoral Dissertation Improvement Grant BSR84-13912 and by a Garden Club of America Award in Tropical Botany.

² Missouri Botanical Garden and Washington University. P.O. Box 299, St. Louis, Missouri 63166-0299, U.S.A.

"burmeisteroid" corolla morphology (a short, straight tube with an abruptly ampliate throat and falcate lobes). The strongly turbinate hypanthium visible in the Field Museum type photograph suggests the mature fruit of this species to be capsular rather than baccate. Furthermore, the coriaceous and rugose texture of the leaves characterizes many members of *Siphocampylus* but is unknown in *Burmeistera*. An open anther-tube orifice of the kind described by Zahlbruckner is, however, extremely rare in *Siphocampylus*.

OBSERVATIONS

In order to investigate further the generic placement of this species, I visited the type locality in January 1987 to collect fresh material and to ascertain the fruit type and anther-tube morphology. This represents the first collection since the type was collected by August Weberbauer 85 years before. The fruits turned out to be capsular with half-superior ovaries. Careful examination of fresh pedicels occasionally revealed bracteoles, a feature often difficult to observe in dried material. The presence or absence of these bracteoles was consistent within individual inflorescences. The most interesting confirmation is of the dilated anther-tube orifice. Zahlbruckner's description of this feature is true for the species and not based on an artifact of preservation as I had previously assumed.

TAXONOMIC TREATMENT

Siphocampylus oscitans B. A. Stein, nom. nov.
Burmeistera weberbaueri A. Zahlbr., Bot. Jahrb. Syst. 37: 451. 1906. Non *Siphocampylus weberbaueri* A. Zahlbr., Bot. Jahrb. Syst. 37: 456. 1906. TYPE: Peru. Junín: Prov. Tarma, mountains east of Huacapistana, 3,200 m, Jan. 1902, *Weberbauer 2203* (lectotype here designated, W; isoelectotype, G). SYNTYPE: Peru. Junín: Prov. Tarma, mountains east of Palca, 3,200–3,600 m, Feb. 1902, *Weberbauer 2473* (MOL, photograph of lost B syntype, F neg. 9074).

Erect many-branched *shrubs* to 1.5 m tall, glabrous throughout; stems green or more commonly maroon, terete when fresh, drying compressed; white latex present in all parts. *Leaves* clustered toward branch tips, alternate and spirally arranged, rarely appearing subopposite or pseudoverticillate, sessile; blades narrowly ovate

to lanceolate, (3–)5–9 cm long, (0.7–)1.5–4 cm wide, apex attenuate, base rounded to obtuse; margins densely and sharply callose-serrulate, 9–13 teeth per cm; when fresh the lamina fleshy and coriaceous with the tips recurving, the adaxial surface smooth and dark green, the abaxial surface pale or occasionally tinged purple, drying coriaceous with the adaxial surface nitid and rugose, prominently impressed by the 6–8 acutely ascending, almost straight secondary veins. *Inflorescence* subcorymbose and auxotelic, the flowers solitary in congested upper leaf axils, the rachis later elongating and producing normal foliage leaves beyond the maturing flowers and fruits; pedicels ascending to spreading, 4–8 cm long, generally exceeding length of subtending leaves, occasionally with sub-basal, subulate bracteoles to 2 mm long. *Flowers* 35–40 mm long; hypanthium widely obconic, the sides strongly divergent, 3–4 mm long, 7–9 mm wide at summit, often suffused with maroon; sepals erect or slightly spreading, triangular, 8–11 mm long, 3–4 mm wide at base, about twice the length of hypanthium, the margins entire or minutely denticulate; corolla green and maroon, yellowish within, corolla tube straight, 15–18 mm long dorsally and 10–15 mm long ventrally, ca. 6–8 mm wide at base, narrowing and re-expanding slightly above, the lobes lance-oblong with acuminate slightly revolute tips, mostly abruptly decurved, the dorsal lobes falcate, 14–17 mm long, ca. 4 mm wide at base, the lateral and ventral lobes 11–14 mm long; filament tube 27–30 mm long, adnate to corolla ca. 4 mm above base, glabrous and greenish, well exerted from corolla; anthers connate, the upper 7–8.5 mm long, the lower 6.5–7 mm long, glabrous except for sparse, wispy hairs surrounding anther-tube orifice, this open, ca. 3 mm wide; style slightly exerted from anther tube; stigma ca. 3 mm wide. *Fruit* a half-superior capsule dehiscing by two terminal valves, 15 mm long (including valves), 10 mm wide; seeds ellipsoid, minutely foveate, ca. 0.6 mm long.

Distribution. Known only from shrubland at ca. 3,200 m on the eastern slope of the Andes near Palca and Huacapistana in Junín Department of central Peru.

Additional specimens examined. PERU. JUNIN: Vitoc, 3,600 m, Feb. 1984, *Pearce s.n.* (BM); Prov. Tarma, mountains E of Palca, rd. to Illic, 10–12 km above Culebreo, 11°19'S, 75°33'W, 3,250 m, 13 Jan. 1987, *Stein, Kallunki & Diaz 3831* (AAU, B, CAS, F, G, K, MO, NY, P, US, USM).

DISCUSSION

The presence of capsular fruit in this species excludes it from *Burmeistera* as currently circumscribed. Among the capsular-fruited genera it is best placed in *Siphocampylus* based on the entire corolla tube. Since the name *Siphocampylus weberbaueri* has already been used by Zahlbruckner (1906), I propose the new name *Siphocampylus oscitans* for this species. The epithet *oscitans* derives from the Latin for yawning, in reference to the dilated anther-tube orifice, an unusual feature in *Siphocampylus*. *Siphocampylus oscitans* is easily recognized among Peruvian members of this genus by its completely glabrous, stiff, coriaceous, lanceolate leaves, relatively short and stout corolla with strongly deflexed lobes, and erect to spreading sepals that are about twice as long as the strongly obconic hypanthium.

An open anther tube of the kind found in *Siphocampylus oscitans* is known in only two other members of the genus: *S. sceptrum* Decne. of Venezuela and *S. rusbyanus* Britton of Bolivia and southern Peru. While *S. oscitans* occurs nearer geographically to *S. rusbyanus*, morphologically it more closely resembles certain phases of the highly variable *S. sceptrum*. In addition to the open and thinly pubescent anther-tube orifice, certain collections of *S. sceptrum* share the following features with *S. oscitans*: a half-superior ovary and shallow hypanthium; thick, sessile, and often lanceolate or narrowly ovate leaves with acutely ascending venation; a similar subcorymbose inflorescence; variably bracteolate pedicels; adnation of the filaments to the corolla tube near its base; and a stout, straight corolla tube. The two species differ most obviously in the length of the corolla and in the extent of fusion of the four upper lobes (the feature that best characterizes *S. sceptrum*). On the basis of these similarities, *S. oscitans* seems best placed near *S. sceptrum* in sect. *Brachysiphon* F. Wimmer.

Zahlbruckner (1906) cited two Weberbauer collections (2203 and 2473) in the protologue of *Burmeistera weberbaueri*. Gleason (1925) designated *Weberbauer 2203* as the "type," but it is unclear whether this constitutes valid lectotypification. He gave no indication that the type specimen was actually examined and may well have

been following the then common practice of designating the first collection listed in the original description. The type specimens studied by Zahlbruckner at Berlin were both apparently destroyed during World War II (B. E. Leuenberger, pers. comm.), and my search of that herbarium confirms their absence. Because Zahlbruckner worked at Vienna and annotated the W sheet of *Weberbauer 2203*, I have designated that specimen as the lectotype.

Note added in proof: Recent examination of the type of *Burmeistera splendens* at BM shows this to be a fourth species of *Siphocampylus* with a dilated anther tube. This Colombian species appears closely related to *S. oscitans* based on anther tube, hypanthium, sepal, and foliage features, and provides support for the above discussion linking *S. oscitans* of Peru with *S. sceptrum* of Venezuela. I here make the transfer of *B. splendens* to *Siphocampylus*, as has already been suggested by Jeppesen's annotation on the type specimen.

Siphocampylus splendens (F. Wimmer) Jeppesen ex B. A. Stein, comb. nov. *Burmeistera splendens* F. Wimmer, Pflanzenreich IV. 276c: 836, fig. 15a. 1968. TYPE: Colombia. Andes del Norte, July 1857, *Triana 3059/23* (holotype, BM).

LITERATURE CITED

- BRANTJES, N. B. M. 1983. Regulated pollen issue in *Isotoma*, Campanulaceae, and evolution of secondary pollen presentation. *Acta Bot. Neerl.* 32: 213–222.
- GLEASON, H. A. 1925. Studies on the flora of northern South America IV: the genus *Burmeistera*. *Bull. Torrey Bot. Club* 52: 93–104.
- McVAUGH, R. 1940. A revision of "Laurentia" and allied genera in North America. *Bull. Torrey Bot. Club* 67: 778–798.
- . 1949. Studies in South American Lobelioideae (Campanulaceae) with special reference to Colombian species. *Brittonia* 6: 450–493.
- PRESL, C. B. 1836. *Prodromus Monographiae Lobeliacearum*. Prague.
- STEIN, B. A. 1987. Synopsis of the genus *Burmeistera* in Peru. *Ann. Missouri Bot. Gard.* 74: 494–496.
- WIMMER, F. 1943. Campanulaceae–Lobelioideae. *Pflanzenreich* IV. 276b: 1–260 (Heft 106).
- ZAHLEBRUCKNER, A. 1906. Campanulaceae andinae. *Bot. Jahrb. Syst.* 37: 451–463.